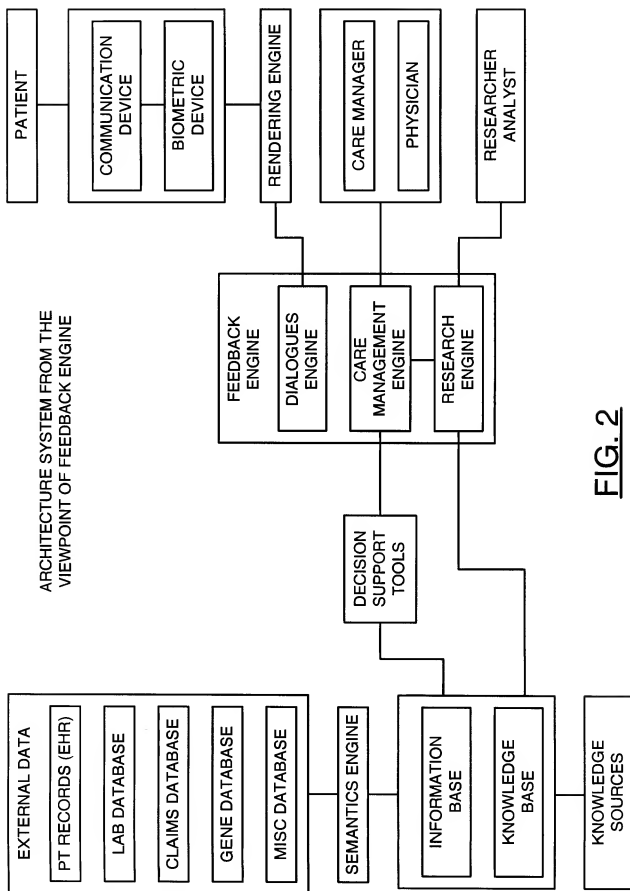
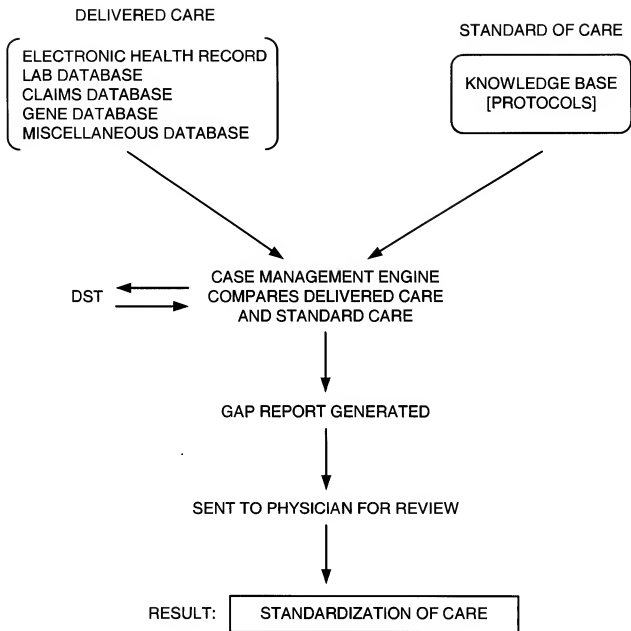
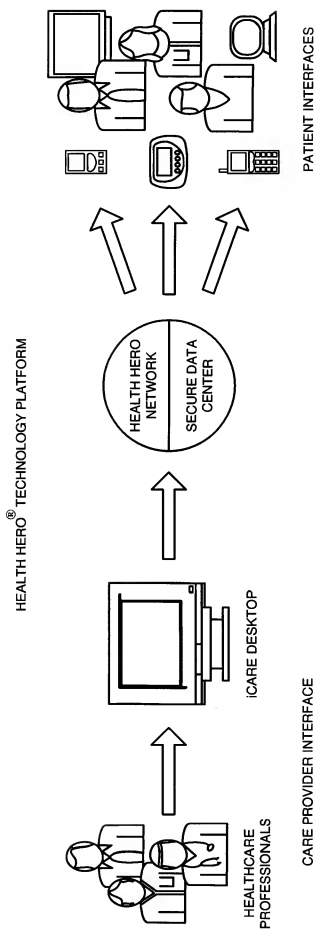
FIG. 1

**FIG. 2**

FIG. 3

FIG. 4

Geoffrey Clapp  
Wed. November 26, 2003

HEALTH HERO  
NETWORK

Find Patient  
  
(Last Name)

GO

Contact Health Hero    Help    Log Out

Home

Patient

Reports

Enrollment

Disenrollment

Schedule

Setup

You have 7 unread inbox items: 1 Alert, 6 High Risk Results and 1 Note overdue

iCare Inbox

Refresh

Submit

Check All - Clear All

		Date	Category	Subject
		▽		
<input type="checkbox"/>	<input type="checkbox"/>	07/21/2003	Alert	2 pound weight gain for patient Gill, Hal
<input type="checkbox"/>	<input checked="" type="checkbox"/>	07/21/2003	Results	High Risk Symptoms for Patient Lura, Craig
<input type="checkbox"/>	<input checked="" type="checkbox"/>	07/20/2003	Results	High Risk Symptoms for Patient Clapp, Geoff
<input type="checkbox"/>	<input checked="" type="checkbox"/>	07/20/2003	Results	High Risk Symptoms for Patient Colt, Laura
<input type="checkbox"/>	<input checked="" type="checkbox"/>	07/19/2003	Results	High Risk Symptoms for Patient Cherry, Julie
<input type="checkbox"/>	<input checked="" type="checkbox"/>	07/19/2003	Results	High Risk Symptoms for Patient Mann, Marie
<input type="checkbox"/>	<input checked="" type="checkbox"/>	07/19/2003	Results	High Risk Symptoms for Patient Wu, Dave

FIG. 5

Luna, Craig  
 Fri, April 4, 2003  
 HEALTH HERO  
 NETWORK

Find Patient  
  
 (Last Name)

GO

Contact Health Hero    Help    Log Out

Home

Patient

Reports

Enrollment

Disenrollment

Schedule

Setup

Work List

Profile

Results

Trends

Notes

Use these options to change the work list below.

1. Show patients from which program?

2. For which session date?

3. For which care management?

[Printer friendly version](#)

[Create Work List](#)

You are viewing sessions for Nov 19, 2003 in the "All Programs" Program

Date: < >

Responders' Risk Summary				
	Symptoms	Behavior	Knowledge	General
High Risk	2	2	0	0
Medium Risk	0	1	2	0
Low Risk	6	5	4	2
None	0	0	0	6

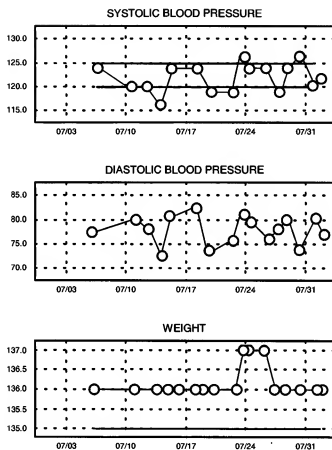
Patient Summary	
<u>Responders</u>	8
<u>Non-Responders</u>	4

Responses on Monday, November 19, 2003

Patient	Response Time	Sympt.	Bhvr.	Kwldg.	Gen.
● <u>Lang, Nancy</u>	08:38 AM PST	High	High		Low
● <u>Cherry, Julie C.</u>	08:41 AM PST	High	Low	Low	None
● <u>Beninger, Jennifer</u>	11:15 AM PST	Low	High	Medium	None
● <u>Messing, Mel</u>	10:16 PM PST	Low	Medium		None
○ <u>Lapp, Mary</u>	09:38 AM PST	Low	Low	Medium	None
○ <u>Coli, Laurie</u>	10:09 PM PST	Low	Low	Low	None
○ <u>Hoff, Jane</u>	11:14 AM PST	Low	Low	Low	Low
○ <u>Man, Marie</u>	09:12 AM PST	Low	Low	Low	None

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FIG. 6

FIG. 7

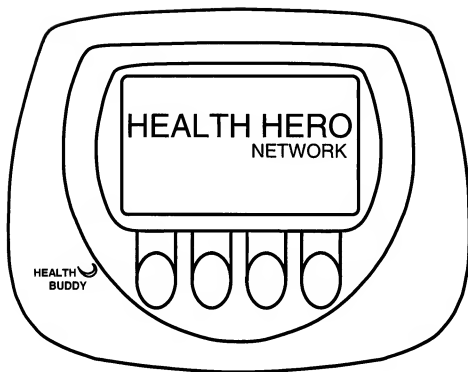
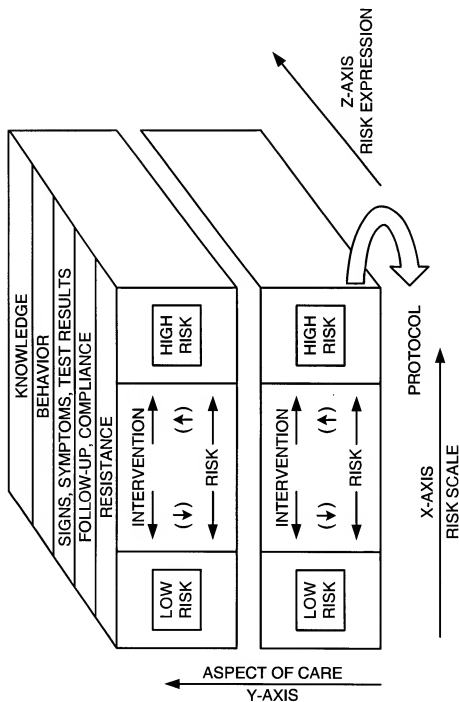


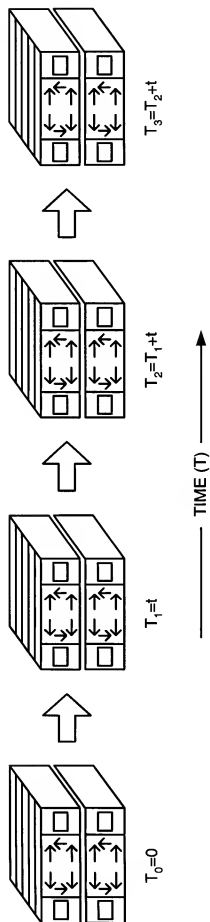
FIG. 8

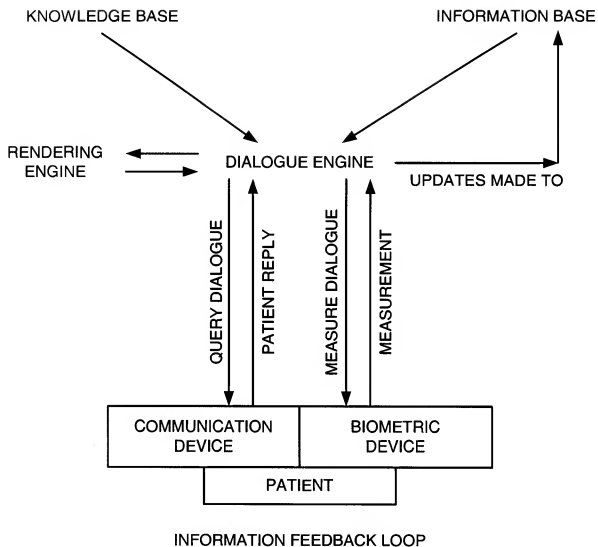


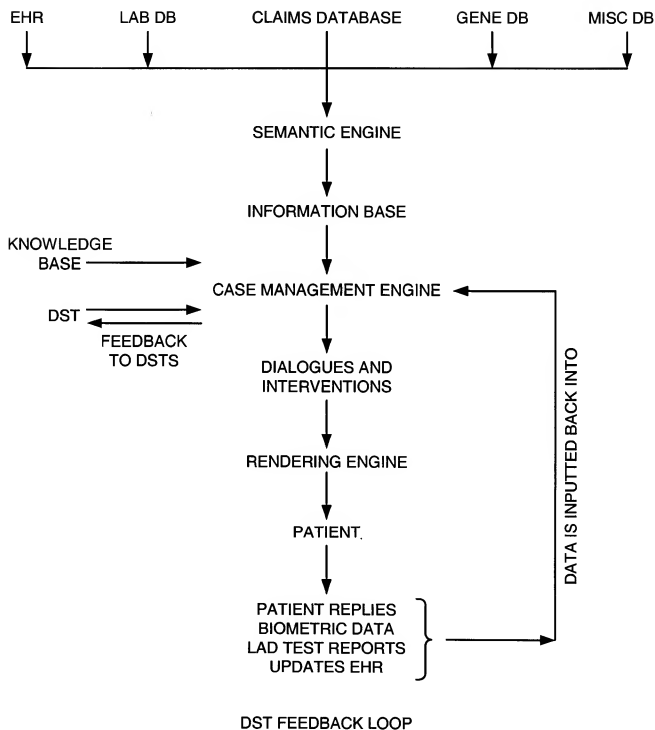


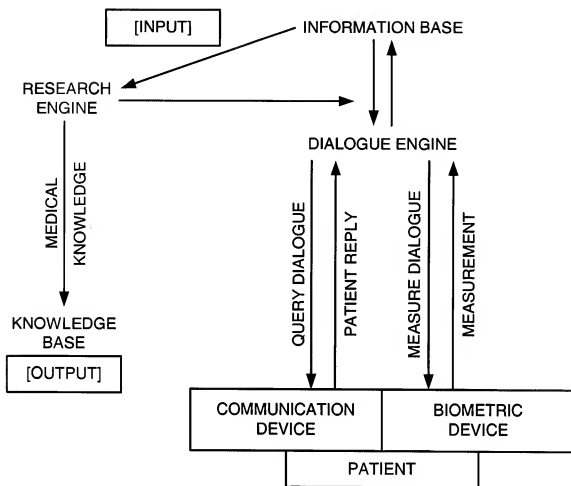
A 3-DIMENSIONAL MODEL OF DISEASE

FIG. 9

FIG. 10

FIG. 11

FIG. 12



RESEARCH FEEDBACK LOOP

FIG. 13

## AGENDA

- ☒ HEALTH HERO NETWORK BACKGROUND
- ☒ CURRENT TECHNOLOGY SOLUTIONS
- ☒ CONTRIBUTION TO MEDKNOWLEDGEMENT
  - INFORMATION AND KNOWLEDGE ACQUISITION → THE FEEDBACK LOOPS
  - CONTRIBUTION TO INNOVATIONS
  - LINKAGE TO OTHER PARTS OF PROJECT
  - PATIENT TRIALS AND EXPECTED OUTCOMES

FIG. 14

## HEALTH HERO NETWORK VISION

- ☒ A BETTER MODEL OF CARE IS POSSIBLE
- ☒ CRISIS CARE → COORDINATED CARE
- ☒ eHEALTH NETWORKS AND TECHNOLOGIES = A POWERFUL ENABLER

FIG. 15

## HEALTH HERO NETWORK

- ☒ FOUNDED 1988 IN MOUNTAIN VIEW, CALIFORNIA. HEALTH HERO NETWORK LTD ESTABLISHED 2003 IN DUBLIN, IRELAND.
- ☒ 25 EMPLOYEES, \$5 MILLION ANNUAL SALES, SERVING 30 PROVIDER SITES AND 2500 PATIENTS WITH DAILY IN-HOME MONITORING.
- ☒ SOLUTION PARTNERS SIGNED IN IRELAND, FRANCE, NETHERLANDS. EXPECTING TO ADD SPAIN, BELGIUM, NORWAY IN 2003.
- ☒ LICENSEES INCLUDE VETERANS HEALTH AFFAIRS, MERCY HEALTH SYSTEM, AMERICAN MEDICAL ALERT, THERASENSE, PHILIPS.

FIG. 16eHEALTH DEMONSTRATION:  
VETERANS HEALTH AFFAIRS (US)

- ☒ CHRONIC CARE PROGRAM USING MODEL OF CARE BASED ON eHEALTH NETWORKS AND TECHNOLOGIES FROM HEALTH HERO NETWORK
- ☒ 791 ELDERLY HIGH-RISK PATIENTS WITH HYPERTENSION, HEART FAILURE, COPD, DIABETES, ENROLLED FOR 1 YEAR, COMPARED TO COMPARISON GROUP DATA
- ☒ RESULTS (DISEASE MANAGEMENT, VOLUME 5, NUMBER 2, 2002)
  - 63% REDUCTION IN HOSPITAL ADMISSIONS
  - 60% REDUCTION IN HOSPITAL BED DAYS
  - 40% REDUCTION IN EMERGENCY ROOM VISITS
  - 64% REDUCTION IN NURSING HOME ADMISSIONS
  - 88% REDUCTION IN NURSING HOME BED DAYS
  - SIGNIFICANT IMPROVEMENT IN QUALITY OF LIFE

FIG. 17

**eHEALTH DEMONSTRATION:  
MERCY HEALTH SYSTEM (US)**

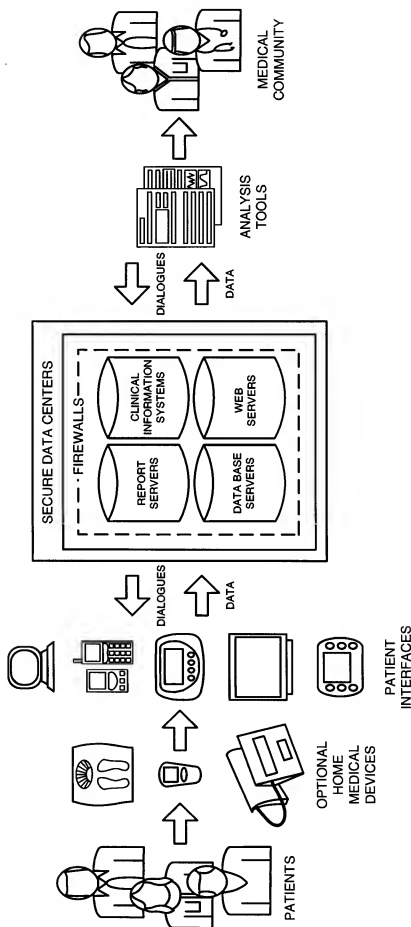
- ☒ **DIABETES MANAGEMENT PROGRAM USING eHEALTH NETWORKS AND TECHNOLOGIES FROM HEALTH HERO NETWORK**
- ☒ **169 LOW INCOME DIABETES PATIENTS, ONE YEAR STUDY PERIOD USING COMPARATIVE COHORT DATA FROM PREVIOUS CALENDAR YEAR**
- ☒ **RESULTS (DISEASE TECHNOLOGIES & THERAPEUTICS JOURNAL, DEC 2002)**
  - **OUTPATIENT VISITS REDUCED 49% ( $p < 0.001$ )**
  - **INPATIENT ADMISSIONS REDUCED 32% ( $p < 0.07$ )**
  - **ER ENCOUNTERS REDUCED 34% ( $p < 0.06$ )**
  - **SIGNIFICANT INCREASE IN QUALITY OF LIFE SCORES**
  - **MEDICATION COMPLIANCE INCREASED FROM 34% TO 94%**

**FIG. 18**



# HEALTH HERO NETWORK PLATFORM

VISION: OPEN SYSTEM FOR CHRONIC CARE RESEARCH AND INNOVATION, ANY DEVICE, ANY DEVICE, MANY PARTNERS



REPLACEMENT SHEET

10/821,120  
1631

**FIG. 19**

## DECISION SUPPORT TOOLS FOR CAREGIVERS

VISION: INTELLIGENT, SIMPLE, WEB-BASED, INTEGRATED WITH  
EXISTING CLINICAL INFORMATION SYSTEMS AND CARE PROCESSES

HEALTH HERO  
NETWORK

Luna, Craig  
Fri, April 4, 2003

Find Patient  (Last Name)

None Patient Profile Reports Enrollment Disenrollment Schedule Setup

Work List Results Trends Notes

Use these options to change the work list below.

1. Show patients from which program?  ☒  ☒ 3. For which care management?  ☒

2. For which session date?  ☒

Print as frequently as desired

You are viewing sessions for Nov 19, 2003 in the "All Programs" Program Date

Responses' Risk Summary		Patient Summary	
Symptoms	Behavior Knowledge General	Diastolodias	8
High Risk	2	2	0
Medium Risk	0	1	2
Low Risk	6	5	4
None	0	0	0

Responses on Monday, November 19, 2003		Sympt.		Behv.		Kwldg.		Gen.	
Patient	Response Time	High	Low	High	Low	High	Low	High	Low
● Lepo, Nancy	08:38 AM PST	High	Low	High	Low	None	None	None	None
● Chon, Julia C.	08:41 AM PST	High	Low	High	Low	Medium	None	None	None
● Benoit, Jennifer	11:18 AM PST	Low	Medium	Low	Medium	None	None	None	None
● Massion, Mel	10:18 PM PST	Low	Low	Low	Low	Medium	None	None	None
● Lepo, Mary	08:38 AM PST	Low	Low	Low	Low	Medium	None	None	None
● Coll, Laura	10:09 PM PST	Low	Low	Low	Low	None	None	None	None
● Hall, Jane	11:14 AM PST	Low	Low	Low	Low	Low	Low	Low	Low
● Han, Maria	09:12 AM PST	Low	Low	Low	Low	Low	Low	Low	None

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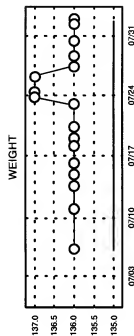
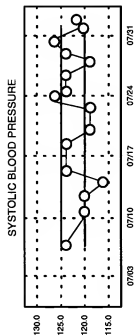
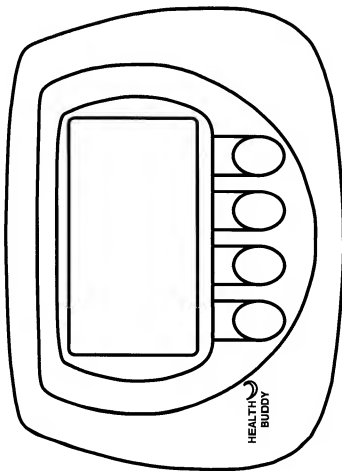


FIG. 20

## DAILY DIALOGUE WITH THE PATIENT

VISION: INTELLIGENT, INTERACTIVE, PERSONALIZED, SIMPLE,  
INTEGRATED WITH CONSUMER AND MEDICAL DEVICES



**FIG. 21**

## REPLACEMENT SHEET

10/821,120  
1631

Hello, Mary,  
What is your weight today?

Less 120 More

◀ ▶

OK



Reminder: A weight gain may be a sign of fluid retention. Be sure to take your medicines and call Dr. Jones if your weight goes up more than 3 pounds.

OK



Daily Health Quiz: What is the best way to avoid feeling thirsty?

1. Drink water constantly
2. Save your fluids for mealtime and when you are feeling very thirsty
3. Eat more salt

1 2 3

# PATIENT DIALOGUE CONTENT

VISION: BASED ON LATEST MEDICAL KNOWLEDGE,  
INDIVIDUALIZED, GENERATING REAL-TIME INFORMATION

Demo Library / Demonstration day dialogues COPD Day	Demo Library / Demonstration day dialogues Diabetes Day	Health Hero NETWORK
<p><b>Demo Library / Demonstration day dialogues CHF Day, 0101</b></p> <p>Legend: <b>On-High Risk</b> @ <b>Low Risk</b> &amp; <b>Medium Risk</b> &lt;= <b>High Risk</b></p> <p>?Welcome back, Pat! Thank you for using the Health Buddy. Begin whenever you are ready [Opening 2: None / General]</p> <p>?Did you weigh yourself today? [Did you weigh today? Weight / Behavior]</p> <p>@ Yes</p> <p>?What is your weight today? (Use the arrows to indicate your weight) [Weight]</p> <p>?Weight [Weight]</p> <p>?Q[Weight trend] = [M=High Weight / 2]</p> <p>0 True</p> <p>?This is much higher than your usual weight. Sometimes weight can be affected by heavy clothing or shoes. Please be sure that you are wearing the correct shoes. [Much Higher: Weight / Symptoms]</p> <p>@ Okay</p> <p>?Remember, if your weight is up 3 or more pounds, call Dr. Wexley today at 555-1212. [Reminder: Weight / Symptoms]</p> <p>0 False</p> <p>?Q[Weight trend] = [M=High Weight / 2]</p> <p>0 True</p> <p>This is somewhat higher than your usual weight. Sometimes weight can be affected by heavy clothing and shoes. Please be sure that you are wearing the correct shoes. [Somewhat Higher: Weight / Symptoms]</p> <p>@ Okay</p> <p>?Q[Weight trend] = [M=High Weight / 1]</p> <p>0 True</p> <p>?This is slightly higher than your usual weight. Sometimes weight can be affected by heavy clothing and shoes. Please be sure that you are wearing the correct shoes. [Slightly Higher: Weight / Symptoms]</p> <p>@ Okay</p>	<p><b>Demo Library / Demonstration day dialogues Diabetes Day</b></p> <p>for you! You may start at any time.</p> <p>COPD, so that you can take the disease process / knowledge and symptoms. Disease process</p> <p>3 days? [None SAS: None / 3]</p> <p>Report this to your doctor today.</p> <p>Your doctor's instructions.</p> <p>ing your doctor's instructions.</p> <p>suggestions to keep up your health.</p> <p>dition are fewer, coughing up blood, lung infection. Pulmonary /</p> <p>more shortness of breath than</p> <p>Acnowledge: Pulmonary /</p> <p>or having more shortness of</p> <p>infection. [Instruct: Pulmonary /</p>	<p><b>Health Hero NETWORK</b></p> <p>you may start at any time.</p> <p>Blood sugar trend question: [None]</p> <p>ing to set for 8 hours or</p> <p>ood sugar? [Please use the</p> <p>et] [ES Value trend: Blood sugar</p> <p>d sugar under 70 is considered</p> <p>Remember to eat a sugar source</p> <p>if it is low, take your medicine,</p> <p>your doctor. [Response: Blood</p> <p>/ Symptoms]</p> <p>d sugar between 134-200 is</p> <p>need to be moderately high</p> <p>your health or diabetic pills</p> <p>your doctor. [Response: Blood</p> <p>/ Symptoms]</p> <p>if levels for 3-4 days. [Response,</p> <p>if monitoring / Symptoms]</p> <p>if over 240 is, generally</p> <p>el too high. Remember to take</p>

FIG. 22

## HEALTH HERO NETWORK CONTRIBUTION TO MEDKNOWLEDGEMENT

- ☑ 1.1 INFORMATION AND KNOWLEDGE SOURCES AND FORMATS
  - ☑ 1.2 INFORMATION ACQUISITION → INFORMATION BASE
  - ☑ 1.3 KNOWLEDGE ACQUISITION → KNOWLEDGE BASE
  - ☑ 1.4 INFORMATION AND KNOWLEDGE PROCESSING → DSTs TO IDENTIFY GAPS BETWEEN INFORMATION BASE AND KNOWLEDGE BASE (I.E., GAPS BETWEEN WHAT IS AND WHAT SHOULD BE)
  - ☑ 1.5 INFORMATION AND KNOWLEDGE RENDERING → RENDERING ENGINE IS THE INTERFACE TO END USERS
- ☑ 1.6 INFORMATION AND KNOWLEDGE ACQUISITION → THE FEEDBACK LOOPS

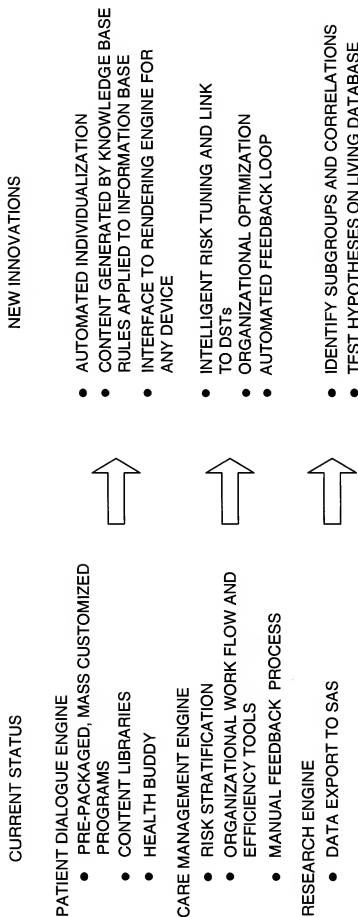
FIG. 23

## INFORMATION AND KNOWLEDGE ACQUISITION → THE FEEDBACK LOOPS

- ☑ PATIENT DIALOGUE ENGINE: INDIVIDUALIZED COMMUNICATION
  - GENERATED USING INFORMATION AND KNOWLEDGE BASE
  - INTERFACE WITH RENDERING ENGINE
  - FEEDBACK TO INFORMATION BASE
- ☑ CARE MANAGEMENT ENGINE: JUST-IN-TIME CARE
  - GENERATED USING INFORMATION AND KNOWLEDGE BASE
  - FEEDBACK TO DSTs
- ☑ RESEARCH ENGINE: REAL-TIME RESEARCH
  - INTERFACE TO INFORMATION BASE [EXTRACT EXISTING DATA]
  - INTERFACE TO DIALOGUE ENGINE [WHEN NEW DATA IS REQUIRED]
  - FEEDBACK TO KNOWLEDGE BASE [NEW DISCOVERIES]

FIG. 24

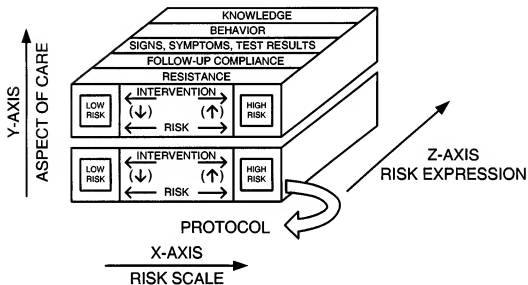
# HEALTH HERO NETWORK CONTRIBUTION TO INNOVATIONS



**FIG. 25**

INTEGRATING FEEDBACK LOOPS  
WITHIN MEDKNOWLEDGEMENT

- ☑ APPLICATION PROGRAM INTERFACES
- ☑ STANDARDS FOR DATA CLASSIFICATION
- ☑ ONTOLOGY FOR INFORMATION AND KNOWLEDGE  
USED IN FEEDBACK PROCESS



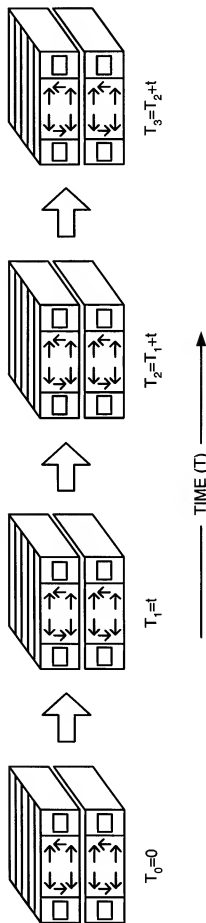
A 3-DIMENSIONAL MODEL OF DISEASE

FIG. 26

# FEEDBACK PROCESS

OVERALL GOAL IS APPLY AND GENERATE MEDICAL KNOWLEDGE  
IN A CONTINUOUS PROCESS THAT LEADS TO LOWEST ACHIEVABLE  
RISK RESULTING IN:

- HIGHER QUALITY OF LIFE
- IMPROVED CLINICAL OUTCOMES
- LOWER COST OF CARE



**FIG. 27**



## EXPECTED RESULTS

- REDUCED EMERGENCY DEPARTMENT ENCOUNTERS AND HOSPITALIZATIONS BY DETECTING PATIENT PROBLEMS BEFORE THEY BECOME A CRISIS
- IMPROVED PATIENT COMPLIANCE BY EDUCATING, MOTIVATING AND MONITORING HEALTH STATUS AND BY PROVIDING PERSONALIZED AND RELEVANT INFORMATION
- IMPROVED SAFETY AND QUALITY OF CARE BY PROVIDING TIMELY AND ACTIONABLE INFORMATION TO HEALTHCARE PROFESSIONALS THROUGH QUALITY ASSURED PROCESSES THAT CAN BE CONTINUOUSLY IMPROVED
- CONTINUITY OF CARE, PARTICULARLY FOR THE ELDERLY, THROUGH INTEGRATED, INTERCONNECTED MONITORING AND INFORMATION SYSTEMS, RATHER THAN FRAGMENTED, EPISODIC, AND CRISIS DRIVEN CARE

FIG. 28